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ABSTRACT

The multidimensional nature of self-concept was studied in early elementary school children. In addition, the accuracy of children's self-concept ratings was determined through comparisons with the following external measures of ability: (1) parent ratings; (2) teacher ratings; and (3) academic achievement. Participants in this study were 100 first- and second-grade children and their families and teachers. The children were individually assessed with self-concept and achievement measures. Parents and teachers rated the children's ability in reading and mathematics. Factor analysis suggested that the children's academic self-concepts were differentiated into two factors: mathematics and language arts. The three external measures of ability were significantly intercorrelated. However, there was poor agreement between the child's self-concept and external measures of ability. Only two variables, reading achievement and the family's rating of mathematics achievement were related to children's language arts and math self-concepts respectively. Analyses comparing the ability judgments of high and low achievers suggested that high ability children rated their math competence significantly higher than low ability children. Overall, the findings support the inferences that the self-concepts of first and second graders are both multidimensional and somewhat inflated and that the formation of an accurate academic self-concept (e.g. one that is significantly related to achievement and external ratings) appears to develop in a domain-specific manner. (Contains 3 tables and 36 references.) (Author/SLD)

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The Accuracy and Multidimensionality of First and Second Grade Students' Academic Self-Concepts

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Abstract

This study's purpose was to test the multidimensional nature of self-concept in early elementary school children. In addition, the accuracy of young children's self-concept ratings was determined through comparisons with the following external measures of ability: (a) parent ratings; (b) teacher ratings; and (c) academic achievement. Participants in this study were 100 first and second grade children, and their families and teachers. The children were individually assessed with self-concept and achievement measures. Parents and teachers provided ratings of the children's ability in reading and math. Factor analysis suggested that children's academic self-concepts were differentiated into two factors: math and language arts. The three external measures of ability were significantly intercorrelated. However, there was poor agreement between the child's self-concept and the external measures of ability. Only two variables, reading achievement and the family's rating of math achievement were related to children's language arts and math self-concepts respectively. Analyses comparing the ability judgements of high and low achievers suggested that high ability children rated their math competence significantly higher than low ability children. Overall, the findings support the inference that (a) first and second grade children's self-concepts are both e multidimensional and somewhat inflated; and (b) the formation of an accurate academic self-concept (e.g., one that is significantly related to achievement and external ratings), appears to develop in a domain-specific manner.

The Accuracy and Multidimensionality of First and Second Grade Students' Academic Self-Concepts

In recent years considerable research has examined the structure and accuracy of self-concept, as well as the relationships between self-concept and academic achievement (Byrne, 1996; Harter, 1983; Helmke & van Aken, 1995; Marsh, 1990a; Marsh, 1990b). However, only a small portion of this research has been conducted on children in the early elementary grades (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Entwisle, Alexander, Pallas, & Cadigan, 1987; Stipek, Roberts, & Sanborn, 1984). The purpose of the current investigation is to examine the structure and accuracy of first and second grade children's academic self-concepts. Specifically, the study explores the multidimensionality of young children's academic self-concepts and their relationships to external ratings of ability.

Multidimensional Structure of Self-Concept

Most research prior to the 1980s was based on the notion that self-perceptions were either unidimensional, or that general self-perception was so dominant that specific facets of self-competency could not be identified (Coopersmith, 1967; Marsh, 1990b). However, in the past two decades, self-competence research and theory has been dominated with multidimensional representations of the self (Bandura, 1986; Harter, 1983; Marsh, 1990b; Schunk, 1990; Shavelson, Hubner, & Stanton, 1976). Research on self-concept has revealed that academic and nonacademic self-concepts are unrelated (Marsh & Smith, 1983), and that the best representation of academic self-concept involves the separation of the math and reading domains (Marsh & Hocevar, 1985).

Support for a multidimensional view of self-concept in early elementary school-aged children has not been firmly established. Shavelson's early explanations stated that as children developed, their self-concepts became more differentiated (Shavelson & Bolus, 1982; Shavelson et al., 1976). Additional research suggested that, before third grade, children were incapable of identifying the multiple domains of the self that older children reported (Harter, 1986; Harter & Pike, 1984).

However, other research has identified that young children do have differentiated self-perceptions (Eccles et al., 1993; Entwisle et al., 1987). Research investigating the factor structure of self-concept across grades found no increase in differentiation for children in first through fourth grades (Eccles et al., 1993) or for children in second through fifth grade (Marsh, Barnes, Cairns, & Tidman, 1984). Further work on the second to fifth grade sample suggests that younger children do have higher correlations between the multiple domains of self-concept than older children (Marsh & Hocevar, 1985). According to Marsh (1989), these findings indicate that young children maintain a strict hierarchical organization of multiple domains of self-concept, whereas older children's self-concept domains are more independent.

The literature seems to indicate that early elementary students may be capable of differentiating between domains, when the self-concept measure is designed to identify specific domains (Byrne, 1996; Marsh, 1989). Nevertheless, Marsh (1989) warns that "it may be premature to conclude either that there is increased differentiation... during the early preadolescent years or that there is no increased differentiation beyond early preadolescence." (p. 427).

Accuracy of Self-Concept in Children

A commonly reported trend in self-concept research is that as children advance through the elementary years, they report increasingly lower self-concepts (Marsh, 1989; Sawyer, Graham, & Harris, 1992). This trend is typically attributed to the progression from an inflated self-concept in early childhood to more accurate self-reports (Eccles et al., 1993; Stipek & MacIver, 1989).

Explanations for the inflated self-concept of early elementary students are varied. One theory asserts that young children have an "ideal" self-image, and that fantasies of this "ideal self" intrude upon the child's "real self," causing reports of self-competence to be more positive than actual ability (Eccles et al., 1993; Harter, 1983; Harter & Pike, 1984; Stipek et al., 1984). A second explanation suggests that young children's inaccurate interpretations of external feedback about their competence can be attributed

to their cognitive developmental level (Entwisle et al., 1987; Stipek, 1981). A third explanation, proposed for the more accurate self-concept ratings of older children, is the increase in self-comparison with peers that comes with formal schooling (Entwisle et al., 1987; Stipek & MacIver, 1989; Sylva, 1994). A fourth explanation addresses the salience of feedback in different classroom environments. Children place a higher value on the day-to-day evaluations they receive in their classrooms than on the infrequent evaluations provided by report cards (Stipek & Daniels, 1988). The salience of negative evaluation has repeatedly been found to lead to decreases in self-competence ratings (Eccles et al., 1993; Entwisle et al., 1987; Stipek et al., 1984). As children progress through preschool and elementary school, they proceed from classroom environments that provide mostly positive feedback to classrooms with more salient negative feedback (Entwisle et al., 1987; Stipek & MacIver, 1989). Researchers propose that the interaction of children's cognitive development and the changing environment of the classrooms best accounts for the trend toward more accurate self-concept reports (Entwisle et al., 1987; Stipek & Daniels, 1988; Stipek & MacIver, 1989).

The importance of this decrease in self-concept ratings has given rise to debate in the literature. The tendency for young children to have inflated self-concepts has been regarded as unimportant (Marsh, 1989), academically desirable (Sawyer et al., 1992), and a determining factor in persistence in new and difficult tasks (Bandura & Schunk, 1981). These high self-concept ratings in young children have also been attributed to young children's egocentric tendencies (Marsh, 1990b), and to the use of ego-defense mechanisms (Connell & Ilardi, 1987). Connell and Ilardi (1987), for example, state that the inaccuracies in young children's self-concepts are not due to methodological "noise." Rather, they are a worthy focus for further research.

External Ratings of Ability

Determining levels of agreement in self-reports and reports by significant others is commonly used in developmental research. Often, parents, peers, or teachers are asked to report on the behavior,

personality, or performance of a child. Marsh and Craven (1991) assert that comparing ability ratings of significant others to children's self-concept reports is appropriate when the goal is "to determine how accurately individuals view themselves" (p. 393). The agreement between children's self-concepts and external ratings of ability is strongest when ratings are given for specific domains that are easily observed (Marsh & Craven, 1991; Marsh, Smith, and Barnes, 1984; Marsh, Smith, Barnes, & Butler, 1983).

Accurate ratings of the child can be assessed by sampling various significant others. The use of multiple raters of ability makes use of converging operations and is an important method to validate the measures of ability (Nunally & Bernstein, 1994). Marsh and Craven (1991), who obtained information from teachers, listed the following reasons why teachers' ratings are useful: Teachers (a) know the students well; (b) have a broad frame of reference for comparing children; (c) are trained to be sensitive to children; and (d) are expected to infer children's self-perceptions in academic and non-academic areas, sometimes for report card purposes. Teacher reports have been found to correlate significantly with fourth to sixth grade children's self-concept ratings (Marsh et al., 1984; Marsh et al., 1983) However, subsequent study on children in third through sixth grade identified that parents were better judges of their child's self-concept than teachers (Marsh & Craven, 1991).

For determining the accuracy of self-concept ratings, Connell and Ilardi (1987) suggested the use of teacher ratings as well as performance on standardized achievement tests. The basis for using both criteria is that ratings given by teachers often include motivation and relationship aspects, whereas the achievement measures do not.

Seginer (1983) noted that parents and teachers utilize different rating criteria when judging ability, because they see children in different situations. Schools tend to be regimented, competitive, and academically oriented. Homes may have a competitive component, but are typically not regimented or exclusively academic (Seginer, 1983). In addition, Seginer (1983) identified three factors that account

for parent ratings of their child's ability: (a) school feedback, which is typically corrective; (b) their own aspirations, often those that have been unfulfilled; and (c) their own knowledge of development and education.

The current research on agreement between self-concept and external ratings of ability suggests that to get a complete picture of the accuracy of children's self-concepts, the researcher needs to compare self-concept to academic achievement, teacher ratings of ability, and parent ratings of ability. The present investigation utilized this design to determine the accuracy of first and second grade children's self-concepts.

Method

Participants

Participants were children, parents, and teachers involved in a longitudinal study on Head Start children's transition to public school. The students chosen for this study were drawn from the comparison group and had, therefore, received no intervention beyond the Head Start program. Children selected for this study met the following criteria: The child (a) attended Head Start between the years of 1991-1993; (b) never attended one of the longitudinal study's intervention schools; (c) was not retained; (d) was not labeled gifted; and (e) was in a regular education classroom.

One hundred students in first (n=61) and second (n=39) grade were investigated in the current project. The sample included 47 males and 53 females, and the racial backgrounds of the children were Caucasian (n=82), African-American (n=17), and Hispanic (n=1). The children in this study came from low-income households.

Information was available from parents of 92 of the students. At times, a few parents who decline to participate in the interview, did not object to the child being tested in school, or the family could not be contacted. Teacher information was also obtained for 92 of the subjects (data on eight cases were missing because some teachers did not return their materials). There was no connection between

the missing data from parents and teachers.

Instruments

Self-Concept. Information was gathered on children's self-perceptions of competence through individual assessments of the children. Two instruments were used for this purpose. Constructed by Harter and Pike (1984), the first instrument (Pictorial Scale of Perceived Competence and Social Acceptance [PSPCSA]) includes a 6-item cognitive/academic competence subscale. The items have a structure-alternative format to minimize social desirability. For each item the child is asked to make a judgement about his/her competence in a specific area, after being shown a picture of a child who is either competent or has difficulty completing a specific task. To promote greater rapport, this measure has separate plates for boys and girls. Sex-based norms are also provided. Harter and Pike report alpha reliabilities ranging from .52 to .79. Validation procedures for this measure include factorial, convergent, discriminant, and predictive validity estimations established using various samples (Harter & Pike, 1978).

Harter and Pike (1984) mention that the PSPCSA may not be a good self-concept measure, and should be regarded as a self-competence measure. However, in a review of current self-concept instruments, the PSPCSA is listed as a good measure of multidimensional self-concept (Byrne, 1996). Byrne (1996) suggests that this instrument is a good choice for work with young children because of its concrete presentation of the questions, the domain specificity of the scale (which is expected to become more specific in future revisions), and the absence of other sound instruments.

The second self-concept measure was an instrument constructed at Purdue University for the longitudinal study from which this sample was drawn. The instrument, the Child Report Card, is a domain specific measure of ability in several academic areas (i.e. math, reading, science). To promote greater rapport, the child is provided with five laminated stars and is prompted by the interviewer to assign to him/herself the number of stars that represent his level of competence in a specific academic

area. Psychometric data for this instrument are not currently available.

Significant Others' Ratings of Competence. Teacher and parent ratings were used to determine how closely the child's self-concept matches with outside judgements of the child's competence. For this, teacher and parent versions of the Child Report Card were constructed. Parents had the instrument read to them to eliminate problems with literacy. The parent and teacher ratings are referred to as ability ratings throughout this report. No psychometric data are available for these instruments.

Academic Achievement. Students' academic achievement was measured using the Woodcock-Johnson Tests of Achievement-Revised (Woodcock & Mather, 1990). Four subtests were chosen for this investigation, which focus on the reading and math achievement of the participants. These were the Letter-Word Identification, Passage Comprehension, Calculation, and Applied Problems subtests. Internal consistencies for the four subtests range from 0.84 to 0.95 (Woodcock & Mather, 1990).

The WJ-R is designed to produce composite scores in reading and math. The composite scores are a combination of two subtests. The "reading" composite score is composed of the Letter-Word Identification and Passage Comprehension subtests, and encompasses various activities leading to reading. This cluster is reported to have a median reliability of .94 for kindergarten to twelfth grade students (Woodcock & Mather, 1990).

The "math" composite is based upon the child's performance in the Calculation and Applied Problems subtests of the WJ-R. This cluster score is reported to have a median reliability of .91 for school aged children (Woodcock & Mather, 1990). The composite scores are used in all analyses of academic achievement.

Procedure

Children in the study met with a trained data collector on two occasions, typically at least one week apart. During the first meeting, children responded to the self-concept scales (Child Report Card and the PSPCSA). During the second testing session, the trained data collectors administered the

Woodcock-Johnson Tests of Achievement, Revised (WJ-R).

Teachers were asked to complete the rating scales independently. The Report Card measure was provided to them in a sealed envelope, either placed in their school mailboxes or handed to them during an observation of their classroom. Teachers were compensated for completing the information on each student.

The family ratings of ability in math and reading were provided by one of the child's parents, or a legal guardian. This information was gathered during an interview conducted in the family's home, or in an alternate location that was convenient and comfortable for the parent. To ensure that there were no literacy barriers, trained data collectors read each question to the parents. The parents were compensated for their time taken to do the interview.

Results

Multidimensionality of Self-Concept

To test the structure of the self-concept ratings offered by the children, the items from Harter and Pike's (1984) Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA) and the Child Report Card were examined via factor analysis. A principal components analysis, followed by varimax rotation resulted in two factors explaining 50.8% of the variance. Items and factor loadings are presented in Table 1. The first factor, labeled Math Self-Concept, was made up of four items (three from the

Insert Table 1 about here

PSPCSA and one from the Child Report Card) that reflected judgements of math ability. The second factor, labeled Language Arts Self-Concept, was made up of the remaining three PSPCSA items. One item ("How good are you at reading") was removed because it had moderate crossloadings on both factors. When the factor analysis was repeated with this variable removed, the results were unchanged.

On the basis of this analysis, factor scores were computed for each child on each of the two

factrors using the Regression option of the SPSS factor analysis program (Norusis, 1993). These factor scores were used in all subsequent analyses. Alpha coefficients for the the math and language arts factors were .63 and .60 respectively.

Agreement of Self-Concept with External Ratings of Ability

The intercorrelation matrix for the child, teacher, family, and achievement variables, shown in Table 2, allows for an evaluation of the degree of agreement between the child's self-concept and external measures of ability. Examination of the child self-concept variables (math and language arts) reveals generally poor agreement between the child's self-concept and the external measures of ability.

Insert Table 2 about here

Due to the use of factor scores derived from the Varimax rotation, which produces orthogonal factor scores, the Language Arts and Math self-concept ratings of children were necessarily uncorrelated. To illustrate the relation between the two factors, a recalculation of the factor score was done by averaging the values of the contributing variables to the Math and Language Arts self-concept factors. The correlation between these two rough estimates of math and language arts self-concept was $r = .51$ ($p < .001$).

To indicate that the findings of poor self-other agreement was not purely a matter of unreliable ratings provided by three outside measures of ability, the intercorrelations among the teacher, parent, and achievement variables were examined. These correlations indicate that the three external ratings of ability and achievement were significantly intercorrelated (see Table 2).

Accuracy of Ability Ratings

To determine the accuracy of the ability ratings, the Reading and Math Composite achievement scores from the Woodcock-Johnson Tests of Achievement, Revised (WJ-R) were used to determine high, average, and low achievement groups for math and reading. The sample was divided into three groups

for both achievement domains. The high achievement group contained children who scored in the top 33.3%, children with scores in the lowest 33.3% were the low achievement group, and the middle group was "average." These achievement groups were used to identify differences between high and low achievers' self-concept ratings, as well as ability ratings provided by their teachers and parents. Significant differences in ability ratings between achievement groups are evidence that the raters (either child, parent, or teacher) provide accurate ratings, as related to achievement. Descriptive data for the math and reading achievement groups are listed in Table 3.

Insert Table 3 about here

No differences in math self-concept were found when comparing children from the high, average, and low math achievement groups. However, these results were not duplicated in the language arts domain. Differences were found between the reading achievement groups on the Language Arts self-concept ratings (see Table 3). Post-hoc analyses, using Scheffe's method ($p < .05$) revealed that the high achievement group reported significantly higher language arts self-concepts than the low achievement group.

Parent ratings of their child's ability were also tested for differences across the three achievement groups. In math and reading, there were significant differences across the three achievement groups in the parent ratings (see Table 3). Scheffe' post-hoc analysis revealed that parents with children in the high-achievement group rated their child's ability significantly higher than the low achievement group's parents in both academic domains.

Significant group differences in teacher ratings of ability were also identified. Scheffe's post-hoc comparisons indicated that teacher ratings of math ability for children in the low math achievement group were lower than the ratings given by teachers of average and high ability achievers. Teachers' ability judgements were also significantly lower for low achievers than for either average or high

achievers. Moreover, teachers' ability judgements differentiated by between high and average achievers in the reading area.

Discussion

Multidimensionality of Self-Concept

The factor analysis in this study produced two self-concept factors (Language Arts and Math), a finding consistent with previous work on the multidimensional structure of academic self-concept (Marsh, 1990b; Marsh & Hocevar, 1985). The presence of these two factors lends support to the limited research base claiming that young children can hold multidimensional views of their competence in different academic areas (Eccles et al., 1993; Entwisle et al., 1987; Marsh et al., 1984). However, the statistically significant correlation between the Language Arts and Math self-concept factors indicates that there is still considerable overlap in children's self-perceptions. This overlap is consistent with existing research and indicated that young children hold self-concepts that are as differentiated as those of older children, but the young child's self-concept domains are highly intercorrelated and hierarchically constrained (Marsh, 1989; Marsh & Hocevar, 1985).

Accuracy of Ability Ratings

First and Second Grade Children's Self-Concepts. On the basis of past research that has identified the tendency for early elementary children to have inflated self-perceptions, we expected no differences between high and low achievers' self-concepts (Eccles et al., 1993; Marsh, 1990b; Stipek & MacIver, 1987). The general inflation of self-concept scores favors low achievers when there is the potential for a ceiling effect, which has been identified as a problem in previous work with young children (Stipek & MacIver, 1989).

Children's Math self-concept ratings did not differ by achievement group. This is consistent with previous work, which has made the argument that these effects are evidence of inflated self-concepts in young children (Stipek & Daniels, 1988). However, the Language Arts self-concepts favored the high

achievement reading group, a typical finding in studies involving older children (Marsh, 1990b). In addition, the Language Arts self-concept factor correlated significantly with reading achievement. These findings indicate that the development of accurate self-concept ratings may be domain specific. This conclusion is consistent with the work of other investigators (i.e., Markus & Kunda, 1986; Marsh et al., 1983; Rawson & Cassady, 1995) who have pointed out that development and change of children's self-concepts occur in specific domains.

The children in this sample may have started to recognize external cues of their ability level in the Language Arts domain. The research on the progression toward a more accurate self-concept, based upon performance variables, suggests that this development may be attributed to the increased salience of normative evaluation as well as to increasing complexity in the child's cognitive development (Entwisle et al., 1987; Stipek & Daniels, 1988; Stipek & MacIver, 1989). Nevertheless, it is not clear at this time why children's self-concepts are more accurate in the language arts than in the math area. More detailed investigations of teacher and family variables surrounding the children's experiences with these two domains are required to make rational conclusions on this issue.

Parent and Teacher Ratings of Academic Ability.

As expected, teacher and parent ratings of children's ability level were relatively accurate in differentiating between high and low achieving children. As Marsh and Craven (1989) point out, the teacher is a natural choice as an external rater of academic ability. Teachers are trained to make evaluations and judgments of ability, and are expected to be most accurate in specific domains in which they have observed the child's performance, such as math and reading (Marsh et al., 1984).

Parents may develop their ratings of the child's ability from several sources, including report cards, communication with the teacher, results from standardized tests administered by the school corporation, and communication with their children (Seginer, 1983). Marsh and Craven (1991), further suggest that parents, because of their involvement in intense interactions with their children are more

accurate than teachers, in predicting the child's self-concept. This assertion is supported in the present study but only in the mathematics domain. Contrary to other research with low SES children (Alexander & Entwisle, 1988), parents in this study were not likely to overestimate their children's academic abilities.

Conclusions and Limitations

The findings of this study indicate that first and second grade children's self-concepts are both multidimensional and somewhat inflated. Moreover, the formation of an accurate academic self-concept (e.g., one that is significantly related to achievement and external ratings), appears to develop in a domain-specific manner. However, a number of limitations must be addressed before the present findings can generalized. First, the subjects in this study may not be representative first and second grade students. All students attended Head Start prior to kindergarten. The Head Start experience many have influenced their self-concept. Being in a school setting longer than children with no preschool experience may accelerate the development of accurate self-concepts in these children (Entwisle et al., 1987). Similarly, the parents may have been affected by the Head Start program. The increased contact with a "school" environment may have contributed to greater accuracy in the formation of parents'ability judgements for their children than is common for low SES parents (Alexander & Entwisle, 1988; Sylva, 1994). Another limitation to this study, that deserves attention in future research, is the lack of information available on the curriculum and classroom environments these children encounter. Variations in these classroom variables, such as salience of feedback, should have a significant impact on the accuracy of the self-concepts reported by the children.

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Table 1

Results from Self-Concept Variable Factor Analysis, Varimax Rotation.

Variable	Factor 1 Math Self-Concept	Factor 2 Language Arts Self-Concept
How good are you at Math?	.801	-0.072
This child is good at adding	.788	.159
This child is good at numbers	.547	.249
This child knows a lot in school	.506	.455
How good are you at reading?	.420	.359
This child is good at reading alone	.141	.829
This child is good at spelling	.012	.663
This child is good at writing words	.418	.560

Note. 1.Items of the Child Report Card are italicized

2.Variables are written in textual form to indicate the spirit of each item entering into the factor. Items from the Child Report Card, are scored from 1 (not good) to 5 (very good). Items from the Pictorial Scale of Perceived Competence, are scored on a 4-point scale (only the positive option is included here;

3. The factor loadings that define each factor are underlined.

Table 2

Intercorrelation Matrix for Self-Concept, Achievement, and Significant Others' Ratings of Ability.

Variable	1	2	3	4	5	6	7	8
1. Language Arts Self-Concept								
2. Math Self Concept	.00							
3. Math Achievement	.14	.04						
4. Reading Achievement	.29**	-.06	.64**					
5. Math Ability: Family Rating	.14	.23*	.35**	.29**				
6. Reading Ability: Family Rating	.13	.03	.52**	.42**	.42**			
7. Math Ability: Teacher Rating	.18	-.12	.29**	.43**	.42**	.45**		
8. Reading Ability: Teacher Rating	.15	-.10	.46**	.64**	.30**	.74**	.52**	

*p <.05; ** p < .01

Table 3

Differences Between Achievement Groups on Self-Concept and Significant Others' Ratings

	High Achievement		Average Achievement		Low Achievement		F
	M	SD	M	SD	M	SD	
Language Arts SC[a]	.33	.69	.12	1.06	-.35	1.11	4.18*
Math SC[a]	.12	.87	.08	1.08	-.19	1.06	.94
Reading (Family Rating)[b]	4.33	.96	3.82	.82	3.35	1.11	8.07**
Math (Family Rating)	4.36	.76	3.81	1.00	3.72	1.00	4.69*
Reading (Teacher Rating)	3.80	1.00	3.03	1.22	1.97	.19	21.56**
Math (Teacher Rating)	3.74	.93	3.25	1.20	2.45	1.15	11.42**

a. The Language Arts and Math Self-Concept scores are given in z-scores

b. Family and teacher ratings of ability are scored on a Likert Scale (1=low; 5=high)

*- $p < .05$; **- $p < .001$